two fractions of cytoplasmic particles plus a nuclear fraction and a supernatant. Eventually Claude revised his initial assessment of the two fractions, accepting that the larger particles were primarily comprised of mitochondria while the small particles were a new cell component he labeled *microsomes*. In the second half of the decade, he and his collaborators refined the procedures for fractionation, especially the choice of media, and began to associate particular enzymes with specific fractions. Claude also introduced another new technique, electron microscopy, initially to examine the isolated fractions and then, in collaboration with Porter, to examine whole cells grown in tissue culture. The latter approach permitted identifying both mitochondria and a lace-like reticulum. They found that the reticulum was related to the microsomes isolated by cell fractionation.

The view of cytoplasm developed through this research was that it was comprised of two primary types of structures – mitochondria and the lace-like reticulum/microsomes – plus a gel-like aqueous component – the "cell sap" or cytosol – corresponding to the supernatant. The two structures were associated with different cell activities. Both morphologists and biochemists rapidly accepted Claude's characterization of the mitochondrion as the power plant of the cell (as we will see in the next chapter). Although Claude remained agnostic about the function of microsomes and related structures in the endoplasm, others such as Brachet and Caspersson had concluded that they figured in protein synthesis. This differentiation of function provided the foundation for a functional decomposition of the cell into organelles in which were situated mechanisms that contributed differentially to cell life. The further development of this account of cellular mechanisms required two additional steps: (1) decomposing the already discovered organelles to show how their component parts contributed differentially to their functioning, and (2) finding the organelles presumed to be associated with other cell functions. A research community that rapidly increased in size energetically pursued these goals in the 1950s and 1960s.

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